REMARKS

This Amendment is filed in response to the Office Action mailed on November 4, 2008, and is herewith filed a Request for Continuing Examination. All objections and rejections are respectfully traversed.

Claims 1-30, and 38 are in this case.

Request for Examiner Interview

Applicant respectfully requests a telephonic interview with the Examiner after the Examiner has had an opportunity to consider this Amendment, but before the issuance of the next Office Action. The Applicant may be reached at 617-951-2500.

Claim Rejections – 35 USC §103

At paragraph 4 of the Office Action, claims 1-2, and 4-13 were rejected under 35 U.S.C. §103 as being unpatentable over Slaughter et al., US Patent No. 6,014,669, hereinafter Slaughter, in view of Chao et al., US Patent No. 6,438,705, hereinafter Chao.

The present invention, as set forth in the representative claim 1 comprises:

1. A storage system for use in a storage system cluster, the storage system comprising:
        a first server and a second server, wherein the second server is a cluster partner to the first server; and
        a storage operating system operating on the first server, the storage operating system including a cluster connection manager configured to create, destroy, and maintain one or more communication sessions with the cluster partner, the cluster connection manager operatively interconnected with a set of cluster connection manager clients, where each cluster connection manager client is a process executing on the storage system, and wherein the cluster connection manger is further configured to create, destroy, and maintain a virtual interface connection between a cluster connection manager client on the first server with a cluster connection man-

ager client on the second server to form a peer process between the cluster connection manager clients, wherein *the virtual interface connection allows remote direct memory access (RDMA) operations that allow the cluster connection manager operating on the first server to directly access memory regions of the cluster partner operating on the second server.*

Slaughter discloses a cluster configuration database that is distributed across active nodes. A consistent copy of the configuration database is maintained on each active node.

Chao discloses a clustering mechanism overlaid on top of multiple underlying clusters. Subclusters supporting application and shared resource failover across a smaller number of nodes is overlaid with a multi-cluster supporting a larger number of nodes.

Applicant respectfully urges that Slaughter and Chao, taken alone or in any combination, do teach or suggest Applicant's claimed novel *the virtual interface connection allows remote direct memory access (RDMA) operations that allow the cluster connection manager operating on the first server to directly access memory regions of the cluster partner operating on the second server.* Applicant's claimed invention is directed to a storage operation system/node which includes a cluster connection manager. The cluster connection manager is located and executes *within each* storage system/node. This cluster connection manager is utilized to open, destroy and maintain communications with a cluster peer process (e.g. a failover monitor that implements various failover features) through use of virtual interface connections. The virtual interface connections allow remote direct memory access (RDMA) operations to be performed by a first server directly on a second server. Furthermore, the cluster connection manager is configured to establish and maintain peer-to-peer connections between its storage node and cluster partner storage node (which also has its own cluster connection manager).

There is no disclosure in either Slaughter or Chao of remote direct memory access (RDMA) operations. There is no disclosure in either Slaughter or Chao of one server or node directly accessing a second node or server.

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Accordingly, Applicant respectfully urges that Slaughter and Chao, either taken alone or in combination, are legally insufficient to render the presently claimed invention obvious under 35 U.S.C 103(a) because of the absence in each of the cited patents of Applicant's claimed novel *the virtual interface connection allows remote direct memory access (RDMA) operations that allow the cluster connection manager operating on the first server to directly access memory regions of the cluster partner operating on the second server.*

At paragraph 13 of the Office Action, claim 3 was rejected under 35 U.S.C. §103 as being unpatentable over Slaughter and Chao, in view of Chu et al., US Patent Application Publication No. 2004/0019821, hereinafter Chu.

Applicant respectfully notes that claim 3 is a dependent claim that depends from independent claim believed to be in condition for allowance. Accordingly, claim 3 is believed to be in condition for allowance.

At paragraph 15 of the Office Action, claims 14-19, 25-38 were rejected under 35 U.S.C. §103 as being unpatentable over Slaughter and Chao in view of Meyer et al., U.S. Patent No. 7,203,730, hereinafter Meyer.

The present invention, as set forth in the representative claim 14 comprises:

14. A method for initiating a peer-to-peer communication session, comprising:
        creating, using a cluster connection manager executing on a first server, an initial connection with a cluster partner on a second server;
        exchanging a set of peer connection information;
passing a set of cluster connection manager client information to the cluster partner, wherein the set of cluster connection manager client information includes at least one virtual interface and any memory requirements for each cluster manager client;
        creating a set of appropriate communication ports using the set of cluster connection manager client information, wherein *the virtual interface connection allows remote direct memory access (RDMA) operations*

*that allow the cluster connection manager operating on the first server
to directly access memory regions of the cluster partner operating on the
second server;*
>   alerting the cluster partner of a ready status; and
>   alerting a set of cluster connection manager clients that the cluster
partner is in a ready state.

Meyer discloses a SCSI device manager which manages a SCSI device. The SCSI device manager is responsible for determining the initial state of the device when it is presented to the manager by a discovery manager. Furthermore, Meyer alerts any clients who wish to be informed when the SCSI devices come and go out of the system thereby informing the clients of the readiness status of the device.

Applicant respectfully urges that Slaughter, Chao and Meyer, taken alone or in any combination, do not teach or suggest Applicant's claimed novel *the virtual interface connection allows remote direct memory access (RDMA) operations that allow the cluster connection manager operating on the first server to directly access memory regions of the cluster partner operating on the second server*. As noted above, Applicant's claimed invention is directed to a storage operation system/node which includes a cluster connection manager. The cluster connection manager is located and executes *within* each storage system/node. This cluster connection manager is utilized to open, destroy and maintain virtual interface connections with a cluster peer process. The virtual interface connections allow remote direct memory access (RDMA) operations to be performed by a first server directly on a second server.

Neither Meyer, Slaughter nor Chao disclose Applicant's *the virtual interface connection allows remote direct memory access (RDMA) operations that allow the cluster connection manager operating on the first server to directly access memory regions of the cluster partner operating on the second server* as both are silent to the concept of remote direct memory access operations .

Accordingly, Applicant respectfully urges that Slaughter, Chao and Meyer, either taken alone or in any combination, are legally insufficient to render the presently claimed

invention obvious under 35 U.S.C 103(a) because of the absence in each of the cited patents of Applicant's claimed novel *the virtual interface connection allows remote direct memory access (RDMA) operations that allow the cluster connection manager operating on the first server to directly access memory regions of the cluster partner operating on the second server.*

At paragraph 30 of the Office Action, claims 20-21 were rejected under 35 U.S.C. §103 as being unpatentable over Slaughter and Chao, in view of Craddock et al., US Patent Application Publication No. 2003/0061296, hereinafter Craddock.

Applicant respectfully notes that claims 20-21 are dependent claims that depend from independent claims believed to be in condition for allowance. Accordingly, claims 20-21 are believed to be in condition for allowance.

At paragraph 33 of the Office Action, claim 22 was rejected under 35 U.S.C. §103 as being unpatentable over Slaughter and Chao, in view of Pinto, US Patent No. 7,099,337, hereinafter Pinto.

The present invention, as set forth in representative claim 22, comprise in part:

22. A method for terminating a peer-to-peer communication session, comprising:
   alerting, using a cluster connection manager executing on a storage system, a set of clients of an impending termination of the communication session;
   closing, by the clients, a set of communication ports associated with the communication session, wherein the set of communication ports comprise a set of virtual interface connections; and
   performing an initialization of a peer-to-peer communication session procedure, wherein *each virtual interface connection allows remote direct memory access (RDMA) operations that allow the cluster connection manager operating on the first server to directly access memory regions of the cluster partner operating on the second server.*

Pinto discloses a host node to implement redirection for Class Managers that do not reside on the host node in order to process incoming data messages accordingly in a switched fabric for scalable solutions.

Applicant respectfully urges that Slaughter, Chao and Pinto, taken alone or in any combination, do not teach or suggest Applicant's claimed novel *each virtual interface connection allows remote direct memory access (RDMA) operations that allow the cluster connection manager operating on the first server to directly access memory regions of the cluster partner operating on the second server*.

There is no disclosure in either Slaughter, Chao or Pinto of virtual interface connections that allow remote direct memory access operations.

Applicant respectfully urges that Slaughter, Chao and Pinto, either taken alone or in any combination, are legally insufficient to render the presently claimed invention obvious under 35 U.S.C 103(a) because of the absence in each of the cited patents of Applicant's claimed novel *each virtual interface connection allows remote direct memory access (RDMA) operations that allow the cluster connection manager operating on the first server to directly access memory regions of the cluster partner operating on the second server*.

At paragraph 35 of the Office Action, claims 23-24 were rejected under 35 U.S.C. §103 as being unpatentable over Slaughter and Chao, in view of Pinto, and Gronke, US Patent Application Publication No. 2002/0071386.

Applicant respectfully notes that claims 23-24 are dependent claims that depend from independent claims believed to be in condition for allowance. Accordingly, claims 23-24 are believed to be in condition for allowance.

All independent claims are believed to be in condition for allowance.

All dependent claims are believed to be dependent from allowable independent claims, and therefore in condition for allowance.

Favorable action is respectfully solicited.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

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